

(12) **UK Patent**(19) **GB**(11) **2 417 347**(13) **B**(45) Date of publication: **15.08.2007**(54) Title of the invention: **Customer assistance system for stores**(51) INT CL: **G06Q 30/00** (2006.01)(21) Application No: **0520972.1**(22) Date of Filing: **16.03.2004**

(30) Priority Data:

(31) **10312026** (32) **18.03.2003** (33) **DE**(31) **10314349** (32) **31.03.2003** (33) **DE**

(86) International Application Data:

PCT/EP2004/002697 De 16.03.2004

(87) International Publication Data:

WO2004/084104 De 30.09.2004(43) Date A Publication: **22.02.2006**

(52) UK CL (Edition X):

NOT CLASSIFIED

(56) Documents Cited:

EP 0991039 A**WO 1998/038589 A****WO 1993/004449 A****DE 010028980 A****US 4882724 A**

(58) Field of Search:

As for published application 2417347 A viz:

INT CL **G06F, G07F****Other****EPO-INTERNAL, WPI DATA, PAJ, INSPEC,****IBM-TDB**

updated as appropriate

(72) Inventor(s):

Wolfgang Kratzenberg

(73) Proprietor(s):

Expresso Deutschland GmbH**(Incorporated in the Federal Republic of Germany)****Antonius-Raab-Strasse 19, 34123 Kassel,
Federal Republic of Germany**

(74) Agent and/or Address for Service:

Brookes Batchellor LLP**102-108 Clerkenwell Road, LONDON,
EC1M 5SA, United Kingdom**

Figure 1

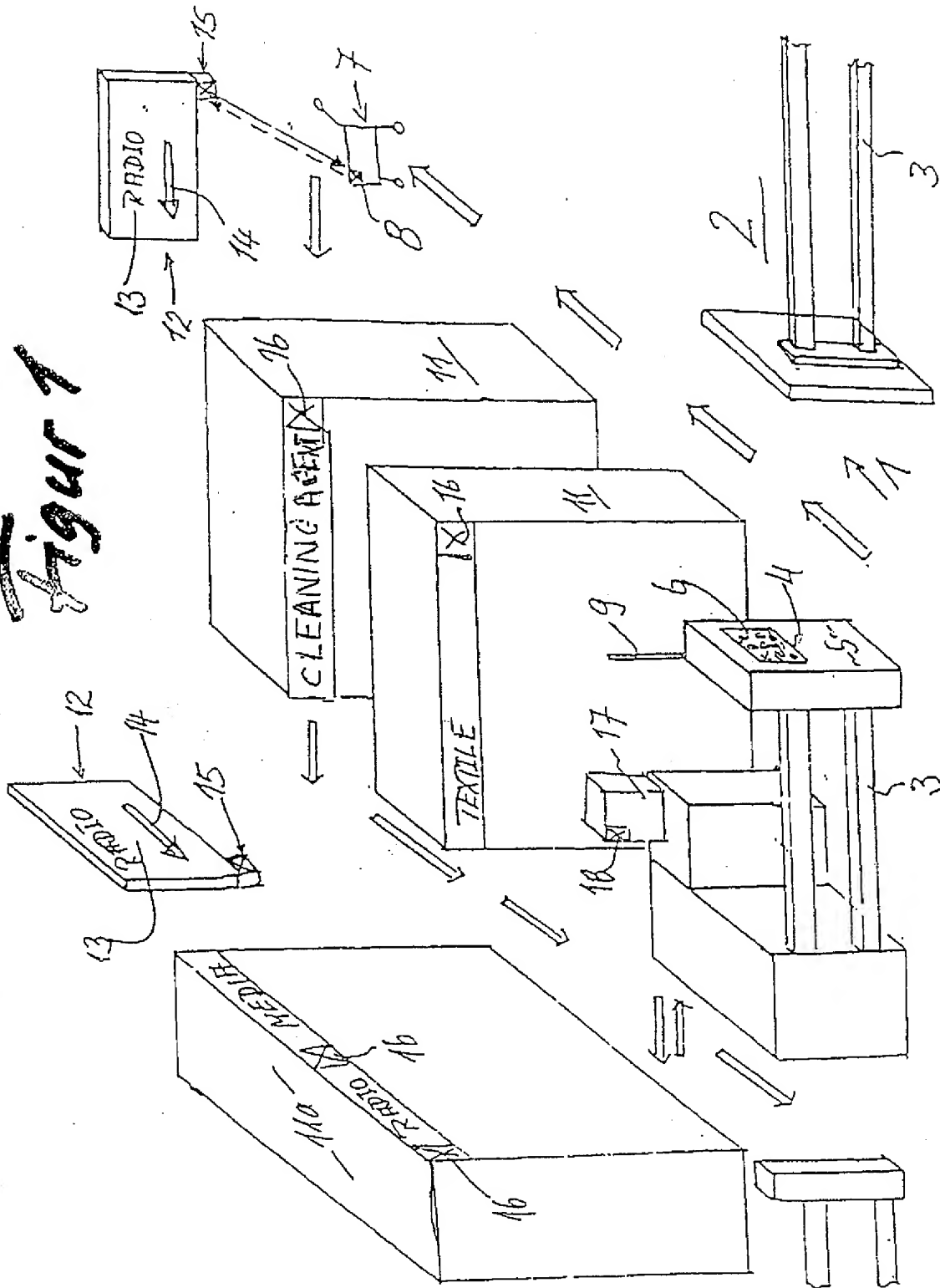
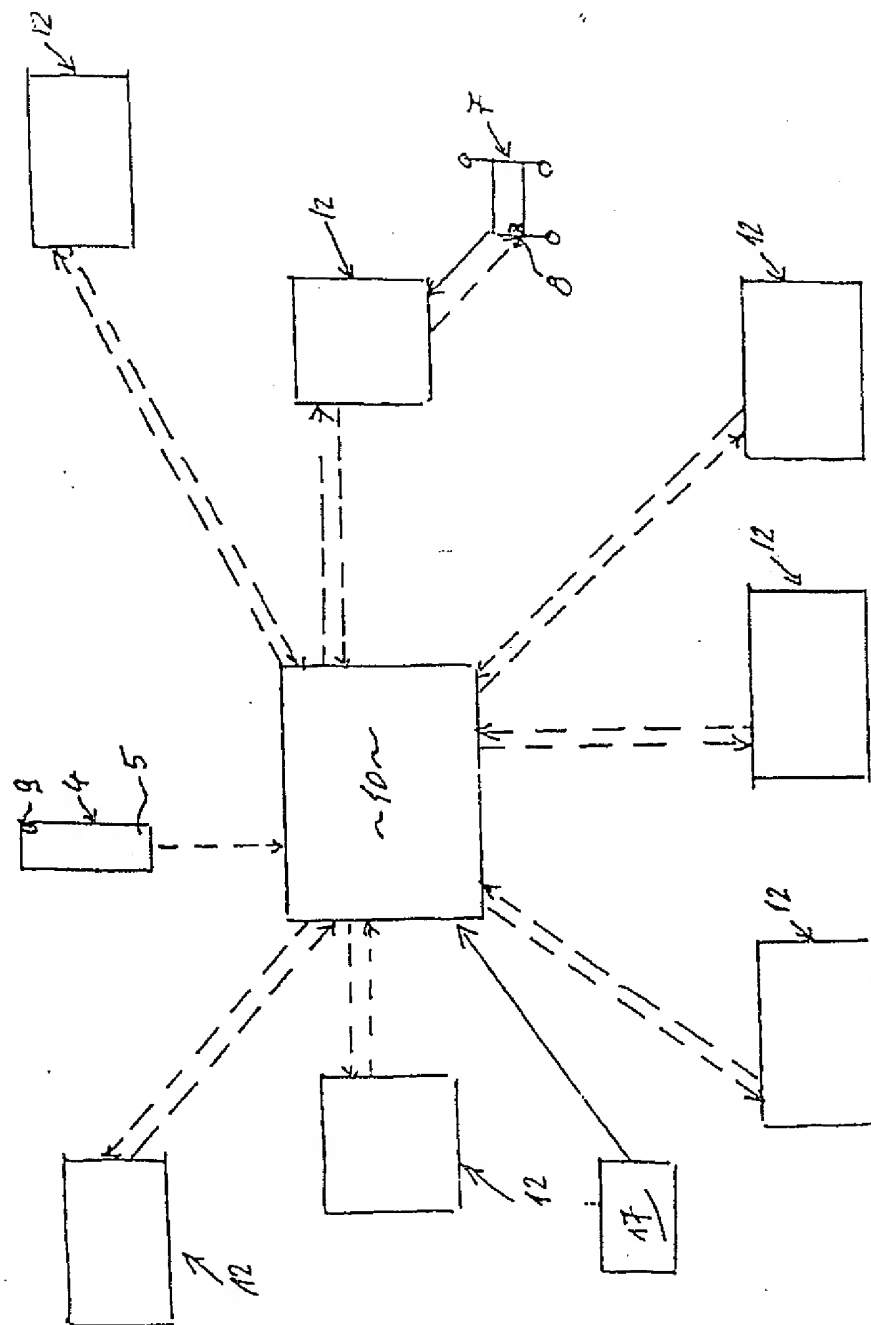
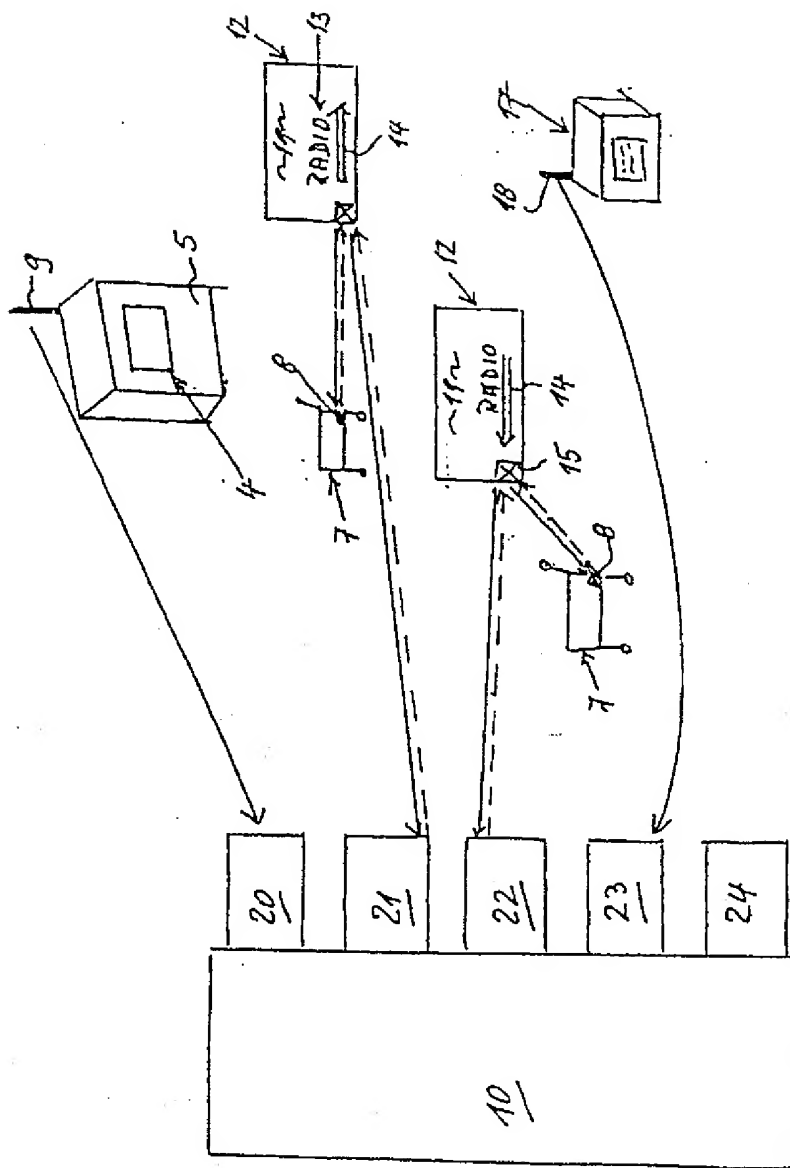


Figure 2



Figur 3

Customer Assistance System for Stores

The invention relates to a customer assistance system for stores with an
5 extremely large sales area, in particular hypermarkets.

In stores having an extremely large sales area, in particular hypermarkets, it is to
a great extent useful to the customer to give him aids to hand in order for him to be able
to fulfil his shopping requests easier or to spare him an arduous search for the
respective location or storage place of particular goods. Naturally this is not true for all
10 goods and also not true for all store customers, above all not in respect of daily food
requirements such as fruit and vegetables for example, it is however definitely desirable.
In addition, there is a particular interest from the stores point of view in making
customers found within the sales area aware of particular offers, and likewise to make
location of the place or storage place of the special offer easier.

15 On the other hand, stores are also basically interested in a statistical recording
and evaluation or documentation of typical customer behaviour, above all in dependence
with an originally disclosed customer purchase request, if possible preferably in respect
of the take-it-with-you effect of special offers which are actually introduced to a goods
area located to one side of the group of goods which correspond to the customer's
20 original purchase request. Likewise also of interest to stores is information relating to
turnover of accessories relating to the customer's original purchase request, for example
battery-driven electrical apparatus and

batteries, or washing machines and washing agents and the like. Finally, also of particular interest within the sales area of a store in addition to a targeted route direction of each individual customer, is the issuing of general advertising.

Therefore the invention is based on the task of creating a customer assistance
5 system which – for comparatively small installation costs and very small maintenance costs – achieves on the one hand secure customer guiding within the store and on the other hand, a recording and evaluation of customer and purchase behaviour within the store.

Accordingly there is provided a customer assistance system for stores with a sales
10 area, comprising information output devices distributed over the sales area for providing the customer with targeted information, and at least one central computer, the latter controlling the output of information by means of said information output devices, via transmission means and predefinable programs characterised in that (a) at least one device containing a touch screen connected to said central computer is arranged at the
15 entrance to the sales area, so as to enable the customer to machine-readably identify a desired item or group of items and to simultaneously offer assistance for locating the relevant sales stand or relevant storage place, (b) each shopping trolley or each shopping basket is provided with a passive identification means providing identity information that can be interrogated, (c) the device containing the touch screen is
20 equipped with an interrogation device, formed by a transceiver device, for reading and forwarding the identity information of the shopping trolley or shopping basket to the central computer, (d) there is a number of interrogation devices connected to said central computer and distributed over the sales area, each being formed by a transceiver for identifying and transmitting the identity information of the respective shopping trolley or
25 shopping basket, (e) each said interrogation device includes a transceiver having one part thereof arranged on one of said information output devices and another part arranged on an associated sales stand, (f) said information output devices, have at least

associated therewith means for issuing or displaying guidance or direction information for the customer, (g) the central computer is programmed with customer assistance information.

- 5 The advantage mainly attained with the inventive customer assistance system is firstly seen in that it offers the customer the possibility of requesting an assistance system on entering the sales area of a store, which guides him directly and smoothly and simply to the location of the desired goods. Secondly, an achieved advantage is seen in that touch screens merely need to be installed at entrances to the sales area, and
- 10 therefore waiting and maintenance costs for the customer assistance system is kept within small boundaries. Further, provision in the central computer having a comparison device, enables a tracking of the customer's route so that in the case of him deviating from the shown shortest route, a detour version can be offered which is of benefit on the one hand as regards the safety of the customer's goal guide, and on the other hand, the
- 15 possibility of the customer taking up other goods into his shopping trolley, for example found on offer whilst underway. In other words, the customer

is also offered the possibility to deviate from the shown direct route to the desired goods should he wish this, without him losing the general route guide.

- 5 The provision of the central computer having a preferably self-learning first device encompassing an expert knowledge relating to a customer's general shopping behaviour and an integration device for drawing up a suitable, if necessary comparable group of goods or according to experience in the
- 10 customer's interest area, a guide program taking into consideration goods located in a first group of goods, allows in addition an optimal guiding of the customer through the store sales area.
- 15 However, the inventive customer assistance system also offers a few advantages for store guiding, firstly the route following system enables the determining and documenting of particular purchase interests or at least the customer's interest in particular goods, not belonging at the moment to the purchase
- 20 request, for example goods found on offer.

The self-learning expert knowledge can be enriched in this manner and can be prepared for future arrangement of goods or customer guidance.

25

- Furthermore, without any additional expense, it can be determined and documented as to whether the customer has actually bought the goods given as originally desired and if need be, in which quality or price bracket.
- 30 Further, the inventive customer guiding system enables an optimum use of the information output devices arranged distributed over the sales area, particularly the display panels, in so far as these are merely inserted for customer route direction when he must deviate from his previous
- 35 direction in order to reach the desired group of goods.

Over periods in which no information is necessary for customer guidance, information output devices, particularly display panels can be inserted for general advertising purposes or with reference to special offers, and where a device is advantageously provided in the central computer which records and adds up for later calculation the information output devices occupation time, in particular display panels, having a standardised or general advertising display for a special advertising drive appearing as the customer as opposed to the store.

One of the general ideas on which the present invention is based lies in the customer - on taking a shopping trolley or basket - being provided with a temporary identity, only lasting a period of time extending over his duration of stay in the store, and to detect the movement and activity of this identity within the sales area and to document and evaluate and advance the machine expert knowledge of the central computer so that this enables an as far as possible optimal customer guidance within the sales area.

The invention will now be described by way of example with the aid of the accompanying drawings:

Figure 1 is a schematic representation of a section of a store sales area;

Figure 2 is a schematic representation of the central computer connection to a plurality of transceiver devices for detecting or route following transponders installed in shopping trolleys or baskets, or the temporary identities formed by these latter.

Figure 3 is a schematic representation of a central computer provided with a number of devices for results evaluation.

A pillar 5 bearing a touch screen 4 is arranged at entrance 1 to a sales area generally identified by 2 and is also closed off by barriers 3. A touch screen 4 is provided in a normal position having a number of goods identifications representing 5 the groups of goods offered within the store, in particular pictograms 6. As a reaction to the selection of a group of goods by the customer, touch screen 4 changes its surface in such a way that all goods falling under the selected group of goods are now shown individually to the customer and he now 10 is able to input in touch screen 4 the special goods he wants. Simultaneously all store shopping trolleys 7 or baskets are provided with a transponder 8 issuing on interrogation a special non-confusable identification or temporary identity, which on entering sales area 2, is interrogated by an antenna 15 9 which is in connection with touch screen 4 and which is sent to central computer 10 of the system as the temporary identity of the customer being guided with shopping trolley 7 or basket. A plurality of sales stands are distributed over the store sales area, in which the goods offered for sale are 20 group-wise stocked up in the store. Sales stands 11 are arranged in the shown order at an angle to one another so that the customer searching for a specific item must change his forwards direction one or more times so as to reach that shelf in which the goods he requires are stored. To guide the 25 customer to the or those goods he wants, a sales stand 11a containing a radio serves a number of information output devices arranged distributed over the sales area 2, in particular display panels 12 which are fitted with route direction devices, controllable by central computer 10, in 30 particular goods details 13, here for example arrows 14 provided with radio and thus to show the customer the required change of direction to find the desired goods within the sales area. At the same time display panels of the first transceiver 15 are fitted, which detect the identification or temporary 35 identity of each transponder which arrives in its area and

transmit them to central computer 10 so that this causes an activation of direction instructions or, if no change of direction is necessary, all route direction display can be suppressed. Simultaneously individual sales stands 11 are
5 fitted with corresponding transceiver devices 16, which can establish the customer's arrival at the sought sales stand 11 and can inform central computer 10. Finally, cash desks 17 which are passed by shopping trolley 7 or basket on leaving sales area 2 of the store, are likewise fitted with a trans-
10 ceiver device 18 to recognise the customer's temporary identity with his shopping trolley 7, where the transceiver device is designed to simultaneously transmit the invoice list to central computer 10, so that central computer 10 is informed as to which customer has bought which goods on
15 leaving the sales area.

Information output devices, in particular display panels 12, are not only suitable for issuing route direction functions, but are also suitable at least over a large part 19 of its
20 surface for showing general advertising copy and the like, above all are also suitable for manufacturers and suppliers appearing as store customers. Thus displaying advertising copy or images preferably takes place at times when no route direction is necessary for the customer.

25

Central computer 10 is provided with a first device 20, which carries out a storage and combining of the customer's desired goods via touch screen 4, and the predetermined temporary identity through transponder 8 of the customer's shopping
30 trolley or basket which is taken with him, and that central computer 10 is provided with a second device 21, which is equipped with the aid of expert knowledge available in the computer and the customer's request to produce a guided program for the customer or the temporary identity, and
35 encompasses means for controlling the indicators to infor-

mation output devices, in particular display panels 12, necessary for guiding the customer. These means comprising in the shown embodiment a control of the arrows and factual content shown in indicators 13 & 14 by means of transceiver 5 device 15. There simultaneously results a temporary shut-down or stoppage of information output device advertising display field 19, in particular display panels 12, so as to clarify direction indications.

10 Further, central computer 10 is provided with a comparison device 22 which compares entering information from transceivers 15 distributed over sales area 2 about the passing of a specific identity to a specific place in sales area 2 with the guiding program for a specific customer or specific 15 identity constructed through second device 21, and in the case of deviation, generates assistance instructions for further goal-directed customer guidance.

In addition, central computer 10 is also provided with a 20 device 23 which is suitable for detecting and comparing the goods acquired or paid for at the cash desk by the customer or temporary identity with the goods selected with touch screen 4 on entry to sales area 2 and which further derives a statistical dimension from the result of a plurality of 25 such comparisons for returning customer behaviour, and adds to the central computer's 10 expert knowledge.

Further, central computer 10 is provided with an additional device 24 which imparts the occupied time of individual 30 information output devices, in particular display panels 12 having outside advertising or product advertising, registers and likewise adds up same for an advertising cost invoice.

Claims

1. A customer assistance system for stores with a sales area, comprising information output devices distributed over the sales area for providing the customer with targeted information, and at least one central computer, the latter controlling the output
5 of information by means of said information output devices via transmission means and predefinable programs characterised in that

- 10 (a) at least one device containing a touch screen connected to said central computer is arranged at the entrance to the sales area, so as to enable the customer to select a desired item or group of items and to simultaneously offer assistance for locating the relevant sales stand or relevant storage place,
- (b) each shopping trolley or each shopping basket is provided with a passive identification means providing identity information that can be interrogated,
- 15 (c) the device containing the touch screen is equipped with an interrogation device, formed by a transceiver device, for reading and forwarding the identity information of the shopping trolley or shopping basket to the central computer,
- (d) there is a number of interrogation devices connected to said central computer and distributed over the sales area, each being formed by a transceiver for identifying and transmitting the identity information of the respective shopping
20 trolley or shopping basket, to the central computer for causing route direction functions,
- (e) there is also a number of interrogation devices associated to said sales stands, each being formed by a transceiver for identifying and transmitting the identity information of the respective shopping trolley or shopping basket to establish to the customer's arrival at a sales stand.

(f) said information output devices, have at least associated therewith means for issuing or displaying guidance or direction information for the customer,

(g) the central computer is programmed with customer assistance information.

2. Customer assistance system according to claim 1, characterised in that associated to each shopping trolley and each shopping basket is a transponder responding on interrogation by emitting a distinctive identification signal.

3. Customer assistance system according to claim 1 or 2, characterised in that each said information output device has associated therewith a transceiver device, interrogating the identification of a trolley or basket entering its area and transmitting it same to the central computer.

4. Customer assistance system according to any of claims 1-3, characterised in that a transceiver device is associated to each sales stand, preferably to each group of goods found in a sales stand,

5. Customer assistance system according to any of claims 1-4, characterised in that a transceiver device is also associated to each cash desk in the store.

6. Customer assistance system according to any of claims 1-5, characterised in that said information output devices have display panels for providing direction-indicating displays related to goods by words and direction

arrows.

5 7. Customer assistance system according to any of claims 1-6,
characterised in that the information output devices include illuminated panels
controlled by the central computer as long as they show advertising information,
until a shopping trolley or shopping basket arrives in the area of the respective
transceiver device.

10 8. Customer assistance system according to any of claims 1-7,
characterised in that in conjunction with a direction instruction for the customer,
preference is given to advertising relevant to at least one of the products or group
of products requested by the customer.

15 9. Customer assistance system according to any of claims 1-8,
characterised in that the central computer is equipped with a device for storing and
integrating the customer's purchase request given via the touch screen and also
the customer's temporary identity given by the shopping trolley or shopping basket
identification means, and that the central computer is further equipped with a
device for producing a guiding program and for controlling the displays on the
20 information output devices necessary for development of the guiding program.

25 10. Customer assistance system according to any of claims 1-9,
characterised in that the central computer is equipped with a comparative device
which compares the guiding program drawn up on the basis of the customer's input
request with the customer's actual route through the sales area and, if the
customer's route should deviate from the guiding program imparted, generates the
display of corrective indications, in particular detour indications, to said information

output devices located in the customer's probable route.

5 11. Customer assistance system according to any of claims 1-10,
characterised in that the central computer is equipped with a device having stored
information about groups of connected goods, in particular useful accessories
relating to a principal product.

10 12. Customer assistance system according to any of claims 1-11,
characterised in that the central computer is programmed with general customer
purchase behaviour and has an integrating device for drawing up a suitable
guiding program, taking into consideration goods of interest to the customer
including comparable groups of goods in the field of interest of a customer to a
certain product or group of goods.

15 13. Customer assistance system according to any of claims 1-12,
characterised in that the central computer is equipped with a device for
documenting the purchase request input, for the route followed and for detecting
the bought items of each customer identified by a transponder.

20 14. Customer assistance system according to any of claims 1-13,
characterised in that the central computer is equipped with an interpolating device
for imparting at least partially deviating characteristic customer behaviour in
dependence with the original purchase request input.

25 15. Customer assistance system according to any of claims 1-14,
characterised in that the central computer is equipped with further devices for

statistical evaluation of more or less typical customer behaviour indicators.

16. Customer assistance system according to any of claims 1-15,
characterised in that the central computer is equipped with self-learning capability.

5

17. Customer assistance system according to any of claims 1-16,
characterised in that the central computer has a device provided which records and
adds up for a later calculation of the occupation times of information output
devices.

10

18. Customer assistance system according to any of claims 1-17,
characterised in that the touch screen arranged at the or each entrance to the
sales area has a surface sub-divided into groups of goods, which on touching a
group of goods, changes to a second surface showing all goods of the selected
group of goods in detail.

15

19. A customer assistance system according to any one of the preceding
claims in which the information output devices are display panels.

20